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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,557	06/04/2001	Amarcsh Pangal	884.400US1	7574
21186	7590	04/08/2005	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			DO, CHAT C	
			ART UNIT	PAPER NUMBER
			2193	

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/873,557

Applicant(s)

PANGAL ET AL.

Examiner

Chat C. Do

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,8-14 and 16-26 is/are rejected.
- 7) ☒ Claim(s) 3-7 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/21/2004</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. This communication is responsive to Amendment filed 12/21/2004.
2. Claims 1-26 are pending in this application. Claims 1, 9, and 18 are independent claims.

This Office action is made final.

#### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 8-9, 13-14, 18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Wyland et al. (U.S. 6,205,462).

Re claim 1, Wyland et al. disclose in Figure 2 an integrated circuit comprising: a multiplier (142) to produce a product from two floating point multiplicands (102 and 104 wherein both are floating-points and col. 1 lines 59-63) having a first exponent weight; a floating point conversion unit (140 and 144) to convert the product (output of 142) from the first exponent weight to a converted produce with a second exponent weight; an adder (148) to produce a present sum from the converted product (output of 144) and a previous sum (output of 152 as 154) having the second exponent weight; and a post-normalization unit (156) to convert the present sum to a floating point resultant having the first exponent weight.

Re claim 2, Wyland et al. further disclose in Figure 2 the multiplier is configured to produce a product with an exponent weight of one (Figure 2 wherein the exponent is in binary form or base 2):

Re claim 8, Wyland et al. further disclose in Figure 2 the post-normalization unit (156 inherently) is configured to be turned off while the adder is producing the present sum.

Re claim 9, Wyland et al. disclose in Figure 2 a floating point multiply-accumulate circuit (abstract) comprising: an exponent path (left portion of Figure 2) including: an exponent summer (140) to sum two input exponents having a first weight to produce a product exponent; an exponent conversion unit (144) coupled to the output of the exponent summer, to convert the product exponent to a second weight; and an exponent accumulation stage to choose a larger exponent from the product exponent and an accumulated exponent; and a mantissa path (right portion of Figure 2) including: a mantissa multiplier (142) to multiply two input mantissas (M1 and M2) and produce a product mantissa (output of 142 as 143); a mantissa shifter (144) to shift the product mantissa responsive to the exponent conversion unit in the exponent path; and a mantissa accumulator (148 and 152) to accumulate shifted product mantissas.

Re claim 13, Wyland et al. further disclose in Figure 2 comprising a post-normalization stage to produce a normalized floating-point resultant (156).

Re claim 14, Wyland et al. further disclose in Figure 2 the post-normalization stage (156) is configured to be turned off until accumulation is complete (inherently).

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Re claim 18, it is a method of claim 1. Thus, claim 18 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 20, Wyland et al. further disclose in Figure 2 accumulating the product comprises adding a first plurality of products with a last product, the method further comprising turning off post-normalization until the last product is accumulated (148 and 152 with feedback system).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 12, 16-17, and 19 are rejected under 35 U.S.C. 103(a) as being obvious over Wyland et al. (U.S. 6,205,462) in view of Dibrino et al. (U.S. 6,542,915).

Re claims 12, 16-17, and 19, Wyland et al. do not disclose in Figure 2 the product mantissa accumulator comprises four-to-two compressors in carry-save format.

However, Dibrino et al. disclose in Figure 1B the product mantissa accumulator comprises four-to-two compressors (102 and 103) in carry-save format (102-104).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the product mantissa accumulator comprises four-to-two compressors in carry-save format as seen in Dibrino et al.'s invention into Wyland et

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al.'s invention because it would enable to reduce the circuitry and increase the system performance in general (e.g. col. 1 lines 57 - col. 2 lines 10).

### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 9-14, 16, and 18-26 are rejected under the judicially created doctrine of double patenting over claims 1, 3-6, 9, and 11-18 respectively of U. S. Patent No. 6,779,013 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

Re claim 9, it is a broader claim of claim 1 as cited in the U.S. Patent No. 6,779,013. The only limitation difference between two set of claim is "the mantissa accumulator including an overflow detection circuit responsive to two most significant bits of a sum field output from the mantissa accumulator" as cited in the claim 1.

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Re claim 18, it is a broader claim of claim 11 as cited in the U.S. Patent No. 6,779,013. The only limitation difference between two set of claim is "the detecting overflow as a function of two most significant bits of a sum field of an accumulated product; and post-normalizing the accumulated product" as cited in claim 11.

In general for all the dependent claims 10, 11, 12, 13, 14, 16, 19, 20, 21, 22, 23, 24, 25, and 26 have limitations that are very similar to claims 3, 4, 5, 6, 9, 1, 11, 12, 13, 14, 15, 16, 17, and 18 respectively of U.S. Patent No. 6,779,013.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

#### ***Allowable Subject Matter***

9. Claims 3-7 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

10. Applicant's arguments filed 12/21/2004 have been fully considered but they are not persuasive.

a. The applicant argues in pages 8-9 for independent claims 1, 9, and 18 that the cited reference by Wyland et al. (U.S. 6,205,462) does not disclose a floating-point

conversion unit to convert the product from the first exponent weight to a converted product with a second exponent weight as cited in the present claims.

The examiner respectfully submits that the case for converting the product from the first exponent weight to a converted product with a second exponent weight is seen whenever the input operands are integers. The output of exponent product of integers have to convert to a special floating-point exponent format as seen in Figure 1E. Thus, it is clearly seen that there is a conversion unit to convert the product from the first exponent weight (e.g. Figure 1B) to a converted product with a second exponent weight (e.g. Figure 1E).

b. The applicant argues in pages 9-10 for dependent claims 12, 16-17, and 19 that the Office action fails to provide the evidence of record for a finding of a motivation to combine reference teachings that would enable to reduce the circuitry and increase the system performance in general.

The examiner respectfully submits that the motivation of previous Office action is drawn or concluded generally from the secondary reference by Dibrino et al. (U.S. 6,542,915) wherein column 1 line 57 to column 2 line 10 discloses or teaches or suggests to speed up the system by processing multiple input simultaneously which obviously increase the system performance and reduce the circuitry if done separately in general.



***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do  
Examiner  
Art Unit 2193

March 29, 2005

*Kakali Chaki*  
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